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Mr. Vadura is President and Chief Executive Officer for Web Tools International. Prior to founding Web Tools International, Mr. Vadura spent a year at EDS through its acquisition of MCI Systemhouse. While at EDS he was a Senior Technical Architect in the Americas Technology Office of EDS E.solutions, the \$2+ billion, 20,000-person global unit focused on the strategy, design, implementation, and operations of e-business solutions.

While at MCI Systemhouse, Mr. Vadura was a senior member of the Applied Technology Research (ATR) group. As a member of ATR, he worked to bring advanced technology understanding to senior management and consulted with high-profile delivery and technology understanding projects.

Mr. Vadura has gained a unique strategic focus by architecting and implementing a variety of e-business and distributed computing solutions. His deep technical background including UNIX, Windows, programming languages, client/server computing, real-time software design, Internet software and networking, and collaborative and object oriented technologies have developed Mr. Vadura's unique insight into the world of Information Technology. This understanding is founded on the thorough understanding of the core computing principles on which our modern-day information infrastructure relies for its existence.

In the course of his career, Mr. Vadura has acquired over 10 years of experience in the application of distributed technologies including point-of-sale, emergency 911 systems, and various Internet-enabled solutions.

Mr. Vadura is an occasional guest lecturer at industry conferences. He is an active member of the Internet community, and has written on XML, EDI, Internet solutions, and strategic Internet planning and deployment.

Mr. Vadura graduated from the University of Waterloo, Canada, with a bachelor's degree in Mathematics, and a Master's degree in Computer Science. While at University he held an NSERC scholarship and won several teaching awards.

Prepared Testimony of

Dennis Vadura

**President and Chief Executive Officer
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U.S. House of Representatives
Committee on House Administration

Mr. Chairman and members of the committee:

I appreciate the opportunity to appear here today and offer testimony on the very important issue of Election Reform as it relates to voting machine technology.

With the November 7, 2000 General Election, the country received a stark wake-up call regarding the status of its voting technology. In considering potential remedies to what quickly became a very visible problem, we at Web Tools International (WTI) discussed a number of alternative solutions including Internet based voting. After all, we are an Internet and Information Technology company, and Internet based voting would have been a clear fit for our core business.

However, early on we rejected Internet based voting as a viable solution in the foreseeable future for a number reasons, not the least of which were the need for system security and the need to maintain the integrity of the vote. We therefore set out to regain the voter's trust by designing an accurate and reliable vote counting system that attempted to embrace the best of both the new technology and the old tried-and-true paper based systems. A key design goal of our system was the belief that we should retain, as much as practical, the context of the voter's current polling place experience while enhancing it to take advantage of what a touch screen based system could provide.

The result is AccuPoll, WTI's polling place electronic voting system, that guides the voter through the voting process using a touch sensitive screen, allows the voter to review their ballot for correctness, and provides the voter with a paper ballot that contains their selections and which they deposit in a ballot box in a manor similar to what they do today. AccuPoll is designed to eliminate overvotes – they are simply not allowed, and significantly reduce undervotes from voter error. Together these serve to significantly reduce, if not eliminate entirely, the possibility of inadvertent voter error.

AccuPoll maintains an electronic record of all ballots cast. The paper ballots produced by AccuPoll are both human and machine-readable. Thus the official paper ballots can be audited against the electronic ballots stored by the system and the electronic ballots can themselves be audited against the paper ballots deposited by voters into ballot boxes. The cross-audit of the paper ballot count against the electronic ballot count serves to prevent the possibility of ballot counting error, electronic tampering or paper ballot fraud. In the event of a contest to the election results, the electronic tally as well as the paper ballots can be quickly and consistently audited to verify the election result.

Would the voting machine industry be able to replace outdated machines by the 2002 election? 2004 election?

The replacement of outdated voting devices is dependent on the ability to manufacture the required numbers of devices and on the ability to provide the training required by both the election workers and the voting public.

Historically, voting devices have been manufactured as single use, proprietary devices integrating hardware and software that is unique to the device's vendor. This fact combined with the modest demand for new voting devices in the United States has resulted in an industry that today has a limited manufacturing capacity, and which is unable to quickly adjust its capacity to meet the demand of replacing hundreds of thousands of outdated voting devices. Therefore, it is unlikely that proprietary voting technology manufacturing can be sufficiently ramped up to meet the demands of delivering a solution for the 2002 mid-term or the 2004 General Election.

However, a voting device based on a generic computing platform such as standard off-the-shelf personal computer, combined with a voting system application that is based on open standards can be easily manufactured and deployed to meet the needs of the 2004 General Election. Our AccuPoll system is a prime example of such an integrated solution. The AccuPoll voting application software can be installed and operated on a PC workstation manufactured by any of the large personal computer manufacturers. By using this approach, it is possible to leverage the manufacturing capacity of the entire personal computer industry, not just one vendor, and hence deliver a solution, possibly in time, for the 2002 mid-term elections, and definitely for the 2004 General Election.

The second issue is the ability to educate election workers and the voting public in the use of these new voting devices. Here the issue is time not technology. We must have sufficient time to educate and train both the voters and the election officials. It is for this reason that we at WTI feel that the most prudent course of action would be to deploy the new voting technology to a small sample of the total population in time for the 2002 mid-term elections. This would be used to learn and alter the deployment, training, and software such that it can be successfully deployed for the 2004 General Election. Nothing, can however be done if sufficient funding is not made available by January 2002 so that the pilots can begin and the necessary training can start to take place.

What can be done to improve the equipment certification process?

The process of certifying voting devices must be revised to recognize that software is the key to voting systems in the future. The voting machine industry needs to leverage the manufacturing capacity and technology innovation of the personal computer industry to its advantage. Developing voting system software that can leverage generic PC workstation platforms will result in cost effective voting devices that have the flexibility to adapt to changing needs in the future. The equipment certification process should therefore focus on developing the functionality, testing, and audit standards required to certify voting system software on generic hardware platforms.

To support the ongoing review and development of the Federal voting system standards, Web Tools International supports the recommendation of The Election Center's National Task Force on Election Reform that the Office of Election Administration be sufficiently "funded to keep those standards a dynamic and living document".¹

How can the costs of voting equipment be reduced?

Leveraging the manufacturing capacity, innovation, and cost competitiveness of the personal computing industry will reduce the costs of voting equipment. Integrating certified voting system software with generic PC workstation hardware in a flexible, robust and scaleable package will lower the cost of voting equipment, and can provide for the future acquisition of additional equipment in incremental steps as needs warrant.

What federal action could help facilitate technological improvements in the voting process?

There are two steps that the federal government should take to help facilitate improvements in the voting process – first, provide funding to the states to facilitate election reform, and second, require uniform statewide election standards including voting devices and vote counting processes. The first provides the incentive for states to make the change to the new technology, and the second allows the training of election workers in one area of a state to be consistent with training in other areas of a state. We feel that a uniform statewide electronic voting standard is in the spirit of the December 2000 Supreme Court decision, and is also in the interest of the public as it will serve to reduce training, deployment and maintenance costs.

In what priority order should older voting technologies be replaced?

The order for replacing outdated voting technologies should be based on the observed error rates that each type of device exhibits. Therefore, based on currently available data, we believe that older voting technologies should be replaced in the following order:

1. Punchcard

¹ Testimony provided by R. Doug Lewis of the The Election Center to the Committee on House Administration on May 10, 2001.

2. Optical scan devices where ballots are not counted locally
3. Lever
4. Paper ballots

Conclusion

I want to thank the Committee on House Administration for inviting Web Tools International to participate in the Voting Equipment Technology Exhibit, and providing this opportunity to testify before the Committee. I look forward to responding to any questions you may have.